Tuberculosis

A HANDBOOK FOR PUBLIC HEALTH NURSES AND OTHER INTERESTED HEALTH CARE WORKERS

1990

by Joann L. MacMorran, R.N.
Co-ordinator, Tuberculosis Nursing Communicable Disease Control

Department of Health
Province of Manitoba

Sponsored by: Manitoba Lung Association
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Acknowledgements

The author wishes to acknowledge the invaluable help of Dr. E.S. Hershfield, Director, Tuberculosis Control; members of the Respiratory Section of the University of Manitoba; Mr. R.F. Marks, Executive Director, Manitoba Lung Association and the Board of Directors, Sanatorium Board of Manitoba, for undertaking the publication of this handbook. Appreciation is also expressed to Mrs. A. Draffin-Jones, Miss J. Robertson for their editorial advice and assistance and to Mrs. A. Maskell of the Central Tuberculosis Registry for her patience and diligence in typing the manuscript.

Foreword

Tuberculosis is one of the oldest diseases known to mankind. There are still 2,000 new cases of Tuberculosis reported in Canada each year. Immigration from endemic areas and the declining health of a previously infected elderly population means Tuberculosis is ever present.

Tuberculosis is a notifiable disease. All cases must be reported to the appropriate Department of Health (province or city) in order that contact follow-up be initiated. Unless all infected contacts are sought out and treated, the reservoir of latent Tuberculosis will remain.

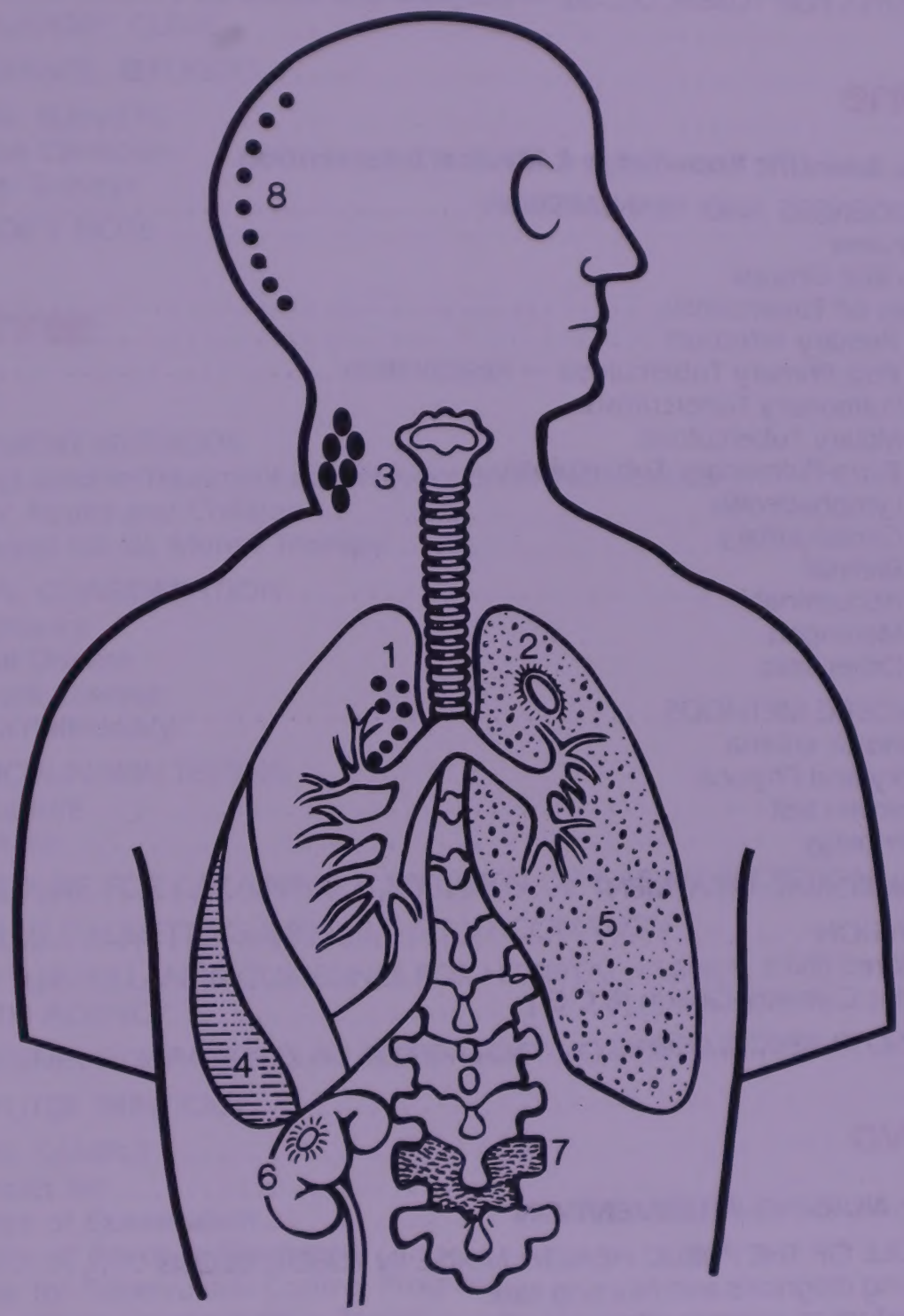
The physician makes the diagnosis of Tuberculosis, prescribes and initiates the treatment. The role of the Public Health Nurse is to provide the supervision and practical management of the prescribed care during the entire course.

The ultimate aim of all those who work in the field is the eradication of Tuberculosis. Since this ideal may not be obtainable in the foreseeable future, reasonable objectives for diagnosis, treatment, supervision and control must be established.

The treatment of Tuberculosis has altered considerably in the past twenty-five years. The major changes have been the change to out-patient care, shortened duration of therapy and selected case finding and follow-up and prevention.

This Handbook will present a review of the disease and will emphasize the team approach in its management and control, with particular reference to the role of the Public Health Nurse. While in actual practice, the various facets of patient care are integrated. For clarity, we have chosen to divide these into the theoretical, medical and nursing perspectives for ease of writing. The major portion of the treatment program occurs when the patient is an out-patient and thus, the burden of supervision in this phase is dependent upon the Health Worker in the home environment of the patient. Complete co-operation between those involved in the hospital and the out-patient phase of the patient's care is crucial.

PATHOGENESIS OF TUBERCULOSIS: COMMON SITES



	SITE	INCIDENCE
1.	Primary Tuberculosis — hilar nodes	5%
2.	Pulmonary Tuberculosis — apices of lung	75%
3.	Tuberculous lymphadenopathy — cervical nodes	9.9%
4.	Tuberculous pleural effusion — pleura	10%
5.	Miliary tuberculosis — massive lymphohematogenous, spread via blood vessels	3%
6.	Tuberculosis of the kidney — kidney cavity	2.7%
7.	Tuberculosis of the spine — bone and disc space	3%
8.	Tuberculous Meningitis — cerebrospinal fluid less than	1%

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Part One

THE FACTS:

Scientific Knowledge and Medical Intervention

Pathogenesis and Transmission of Tuberculosis

OVERVIEW

The tubercle bacillus is transmitted from one person to another in minute, moist droplets produced during coughing or sneezing. Large particles fall to the ground, while the smaller ones mainly evaporate, leaving "droplet nuclei" small enough to be inhaled. These nuclei are carried by air currents and are breathed into the lungs where they settle and grow. Tubercle bacilli that are lodged on fomites (such as linen, furniture, books, and floors) do not constitute a significant infection hazard. Most of them die quickly through the action of drying, heat, or sunlight. Viable bacilli must reach the lung for infection to be established. Rapidly, this primary infection grows and spreads through the blood and lymphatics throughout the body. It settles in secondary sites with a predilection for the apices of the lungs, and much less commonly the lymph nodes (cervical chain), long bones, genitourinary tract, central nervous system and meninges.

At an early stage of this course the body counteracts by the development of cellular immunity against the tubercle bacillus. The outcome of the disease depends on the ensuing battle between the growth of the bacilli and, the body immunity. Some bacillary foci may be killed, others become sealed off, while others with small numbers of viable bacilli remain dormant for years. Later weakening of the patient's cellular immune system allows multiplication of these bacilli and activation of disease. The development of the tuberculin reaction heralds the acquisition of the host's cellular immunity to the tubercle bacillus.

Tuberculosis is not a highly infectious disease, and transmission usually requires close, frequent, or prolonged exposure to a source. Infection occurs from an individual who has bacillary-laden sputum and is coughing. Unsuspected Pulmonary Tuberculosis is a particular menace. Extra Pulmonary Tuberculosis is no risk. The majority of known tuberculosis patients will not transmit infection to others because they take precautions or are on chemotherapy.

The control of Pulmonary Tuberculosis is achieved by adequate anti-tuberculosis therapy making acid fast bacilli non-viable and improved soci-economic conditions to build the host's immunity. Contacts are examined to find other infectious cases.

In summary, the transmission of tuberculous infection occurs through a combination of several factors:

1. viable bacilli in source sputum
2. sputum aerosolization caused by cough
3. adequate concentration of bacilli in air
4. a susceptible host, and
5. a sufficient length of time during which the host is breathing contaminated air.

HIGH-RISK GROUPS FOR TUBERCULOSIS

The risk of active disease in recently infected individuals is maximal (up to 5%) during the first year after infection because the immunity reaction is not fully established. The risk of developing active tuberculosis is highest in children under the age of 5 years but peaks occur in early adulthood. The former is because of an immature immune system. Currently, in Canada, the majority of cases of newly active tuberculosis arise from defined groups; the general population is not exposed and has strong resistance. The following are in order of risk:

1. Persons living with individuals diagnosed with active tuberculosis.
2. Persons who previously had active tuberculosis but received inadequate chemotherapy.
3. Immigrants from countries where tuberculosis is common.
4. Aboriginal persons from Native Indian and Inuit groups.
5. Residents of depressed socio-economic areas.
6. The elderly — this group is three to four times the national rate.

A small number of cases arise in a variety of high-risk groups such as people with silicosis, previous gastrectomies, diabetes mellitus, on immunosuppressive therapy, alcoholics and AIDS.

STAGES OF TUBERCULOSIS

A. PRIMARY INFECTION

At the time of primary infection, ninety percent of patients are entirely asymptomatic and can only be identified through conversion of the tuberculin skin test. Most have normal chest x-rays. In the past, primary infection occurred in childhood. In the 10% of primary infections who are sick, four patterns are seen:

1. Fever and non-productive cough with a chest x-ray with unilateral, lower lobe, patchy parenchymal infiltrates, or hilar adenopathy. Although such patients should receive full anti-tuberculous chemotherapy when diagnosed, the great majority go on to resolution of disease even without treatment.
2. Tuberculous pleurisy with effusion: these patients often have fever, cough, pleuritic chest pain and dyspnoea. Chest x-ray shows unilateral pleural effusion, often without identifiable parenchymal lesions.
3. Immediate progression to classical upper lobe tuberculosis.
4. Immediate development of extra-pulmonary tuberculosis. This pattern was once more common

in young children with cervical adenitis, miliary tuberculosis, or tuberculous meningitis; this sequence is now quite rare.

A work-up for suspected Primary Tuberculosis should have sputums, gastric washings and examination of pleural fluid and biopsy for an effusion.

Primary tuberculous pleurisy will resolve spontaneously. However, up to sixty percent of patients will develop reactivation tuberculosis. Combined chemotherapy is therefore indicated in all patients identified by symptoms.

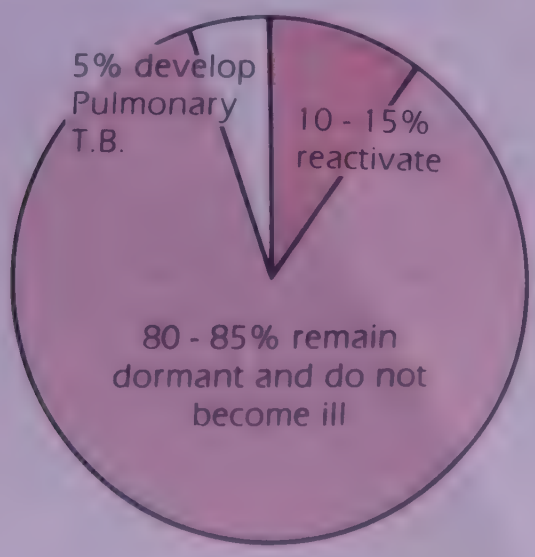
B. POST PRIMARY TUBERCULOSIS — REACTIVATION

(I) Pulmonary

The symptoms usually begin insidiously and progress over a period of many weeks or months prior to diagnosis. Constitutional symptoms such as anorexia, weight loss and night sweats are often prominent. Most patients have low grade fever, but higher temperatures and even chills may be seen in cases in which the disease progresses relatively rapidly. Most patients present with cough and sputum production. Dyspnoea is relatively uncommon. Haemoptysis is frequent, often in the form of bright red blood streaks caused by bronchial irritation.

Chest x-rays showing infiltration in the posterior and/or apical segments of the upper lobe(s) or the superior segment of the lower lobe(s), which may progress to frank cavitation are highly suggestive of the diagnosis. Apical lordotic views and chest tomography may be helpful in documenting cavitary disease behind the clavicles.

The tuberculin skin test is positive in about ninety percent of patients with reactivation tuberculosis, however, patients with advanced disease are often malnourished and may be anergic (not react to skin test). The diagnosis of pulmonary tuberculosis can be confirmed in most individuals by examination of the sputum by direct microscopy and culture. If patients cannot produce sputum, attempts should be made to obtain the appropriate specimens by either gastric lavage or bronchoscopy.



(II) Miliary (Disseminated)

This accounts for three percent of cases. The widespread dissemination of bacilli occurs when the bacilli enter the bloodstream during the initial stages of primary infection before the host immune system has fully responded. Immune suppression by disease or the declining immunity of the elderly may lead to it. It is now commonest in the elderly.

The non-specific symptoms of fever, anorexia, weight loss and weakness are common and this non-specific presentation frequently leads to a delay or lack of diagnosis, with a high fatality rate. The widespread presence of the disease in many organs is not easily detectable. About eighteen percent present with a fever of unknown origin and have a normal chest x-ray and a negative tuberculin test. Diagnosis is difficult, and a high index of suspicion with institution therapy prior to the firm diagnosis is required to prevent morbidity and death.

C. EXTRA-PULMONARY TUBERCULOSIS

(I) Tuberculous Lymphadenitis

Almost all forms of tuberculosis involves regional lymphatics and nodes. Tuberculous lymphadenitis is the most common form of extra-pulmonary tuberculosis. Cervical nodes are the most commonly affected, but any node or group of nodes can be involved. Patients are usually afebrile, and present with slowly enlarging painless mass lesions. Tuberculous nodes can become fluctuant and drain through skin or to contiguous tissues.

Mycobacteria other than tuberculosis can produce the same picture. In children born in Canada today, a disease known as Mycobacterium avium complex, the child is usually well, is less than five years of age, has no history of contact with tuberculosis, and has a normal chest x-ray. The skin test is usually weakly reactive. The nodual site is highly cervical. The pathology is the same as Mycobacterium tuberculosis. However, the diagnosis can be established by a combination of a compatible clinical picture and a differential tuberculin skin testing or by culture of biopsy material.

(II) Genitourinary Tuberculosis

At the time of dissemination, Mycobacterium tuberculosis can seed the kidney. The disease may spread through the whole urinary and genital tract. Symptoms include frequency, dysuria and flank pain resembling acute pyonephritis. The first lesion seen radiologically is a distorted, eroded calyx. Radiological and ultrasound examination of the kidney is needed but testing of the urine identifies asymptomatic sterile pyuria.

Diagnosis depends on culture of the organisms. Only ten percent of the urines are smear-positive. The organism is more likely to be identified in an early-morning concentrated specimen.

Female genital tuberculosis is infrequently reported. The diagnosis depends on culture. Symptoms such as chronic pelvic discomfort may be absent or present. Tuberculosis was once the most common cause of infertility and should be included in its differential diagnosis. Menses may be heavy, light, or absent, depending on the pathological change of the endometrium.

(III) Skeletal Tuberculosis

The most common area involved is the anterior part of the vertebral body usually in the lower spine. The diagnosis is frequently overlooked and so complications such as paraspinal or psoas (cold) abscess are frequent. Compression and vascular damage to the spinal cord may occur leaving the patient paraplegic.

Tuberculous arthritis is usually a mono-arthritis affecting large joints. Synovial biopsy with culture may be required for the diagnosis.

Osteomyelitis affecting other sites in the skeleton is very infrequent but is known to occur.

(IV) Abdominal Tuberculosis

A minority of cases occur in the abdomen usually peritonitis. These cases usually present with an acute abdomen mass, ascites or liver disease. The ileocecal or anorectal gut mimicry Crohn's Disease. Diagnosis is frequently made only after laparotomy.

(V) Tuberculous Meningitis

Tuberculous Meningitis is rare. However, it is associated with devastating complications and/or death.

This is the most rapidly progressive form of tuberculosis. Fifty percent of cases are ill for less than two weeks prior to diagnosis. The clinical course is characterized by headache, fever, meningismus, cranial nerve palsies, seizures, coma, and death.

Cerebrospinal fluid pressure is usually abnormal with increased lymphocytes, high protein and low glucose. Direct microscopy is positive in twenty-five percent and cultures in seventy-five percent of cases. Therapy should be initiated on suspicion of the diagnosis to prevent complications.

(VI) Other Sites

Tuberculosis is a systemic disease and may affect any organ. The most frequently encountered is pericardium, adrenals, skin, eye, and ear.

Adrenal insufficiency should be considered in all patients with active or remote tuberculosis who are doing poorly, particularly if hypotension, hyponatremia, or hyperkalemia are present. Adrenal calcification may or may not be present.

Diagnostic Methods

The diagnosis of tuberculosis must be based on the identification of Mycobacterium Tuberculosis from the patient. The demonstration of caseating granulomata suggests but does not establish a diagnosis of tuberculosis. The presence of acid fast organisms in stained tissue is an indicator but not a diagnostic certainty because of Atypical Mycobacterium.

DIAGNOSTIC CRITERIA

Absolute:	Identification of Mycobacterium Tuberculosis by culture
Probable:	Compatible clinical picture and acid fast organisms seen on the stained smear of secretions or tissue
Suspicious:	Positive tuberculin reaction, history and physical examination, x-ray and laboratory tests compatible with the diagnosis.

HISTORY AND PHYSICAL EXAMINATION

The medical history may suggest tuberculosis but it leaves the specific diagnosis uncertain. A history of contact with a case of tuberculosis may also suggest the diagnosis.

Information on other illnesses (e.g., diabetes, silicosis, etc.), on steroids or radio-therapy, previous chest x-rays and tuberculin tests, prior vaccination with B.C.G. should be elicited. Social, family and personal history and complete list of contacts should be noted. A history of reliability and responsibility, of alcoholism, the home conditions, and other socio-economic factors which may affect treatment and prognosis need to be elicited and recorded.

TUBERCULIN TESTING

The intradermal tuberculin test (Mantoux) is an intradermal skin test, using PPD — bioequivalent to 5 TU PPD-S and is the most accurate of all forms of

tuberculin tests. A POSITIVE skin test is defined as an area of induration of 10 mms or more at 48-72 hours. Erythema is not considered as evidence of a positive skin test and should be ignored. (Appendix 2).

A POSITIVE TUBERCULIN SKIN TEST DOES NOT NECESSARILY INDICATE THE PRESENCE OF ACTIVE TUBERCULOSIS AT THE TIME OF THE TEST, BUT IT IS EVIDENCE OF INVASION OF BODY TISSUES BY THE TUBERCLE BACILLUS.

0 - 4 mm induration = negative reaction: reflects lack of tuberculin sensitivity
low grade sensitivity, most likely not Mycobacterium Tuberculosis

5 mm of induration or more is considered a positive reaction in the following:
1. immunosuppressed persons
2. those with HIV infection

10 mm of induration or more is considered a positive reaction in the following:
1. immigrants from countries with high tuberculosis prevalence
2. intervenous drug abusers
3. homeless
4. residents of nursing homes and correctional institutions
5. persons with other diseases that have been associated with a higher risk of tuberculosis

Tuberculin sensitivity may vary from time to time, and from person to person, provided that proper testing material is used, and the proper procedures followed, a positive skin test can be elicited in the majority of patients with active tuberculosis. Depression of cellular immunity may occur in sarcoidosis, in diseases of the lymphopoietic system, severe illness including tuberculosis, or if the patient is receiving steroids or immuno-suppressive drugs. Anergy to the skin test (no reaction) occurs frequently with viral diseases such as measles, mumps and varicella and viral vaccines (measles, mumps, rubella) can produce anergy for up to two months. Therefore, negative or small reactions when anergy is suspected must be interpreted with caution and be repeated in 1-2 months.

BACTERIOLOGY

There are presently several laboratories in Manitoba equipped to identify Mycobacterium Tuberculosis.

Examination of three sputum specimens for tubercle bacilli starts at the bedside/clinic. The patient should be asked to produce a morning sputum and to raise it from below the larynx.

When satisfactory sputum is not available, then gastric washings or tracheal secretions may be used. Gastric lavage must be carried out in the early morning after an overnight fast.

If genitourinary tuberulosis is suspected, three early morning urine specimens should be examined.

In Disseminated (Miliary) Tuberculosis, tubercle bacilli can be present in the patient's urine, but usually biopsy and culture of the liver and bone marrow are needed.

The first step in the laboratory examination of specimens for tuberculosis is the microscopic examination of concentrated stained smears. For the staining of slides, the method of Ziehl-Neelsen (Kinyoun) is used. Direct microscopic examination is primarily used for sputum specimens.

Direct microscopic examination of Ziehl-Neelsen (Kinyoun) stained smears is cumbersome and time consuming, and in many laboratories preference is given to fluorescent microscopy for the screening of new cases.

Mycobacterium Tuberculosis is a slow growing organism. It requires 4-10 weeks incubation for sufficient growth for identification. In practice thirty to forty percent of smear-negative specimens may prove positive by culture.

A new system of radiometric detection can detect growth of tuberculosis in 5-10 days.

Antimicrobial Treatment

Effective chemotherapy taken over an adequate period of time is the primary treatment of all forms of tuberculosis. THE OBJECTIVE OF TUBERCULOSIS THERAPY IS TO ACHIEVE LIFETIME CONTROL OF THE DISEASE IN THE PATIENT. Such factors as rest, diet, and climate are relatively unimportant in determining the clinical outcome.

Chemotherapy of tuberculosis is a two phase process, the first aimed at rapid reduction in the number of tubercle bacilli in the body and the second at maintaining treatment long enough to eliminate the smaller number of persisting organisms.

Treatment consists of a combination of three (sometimes four) drugs for the initial phase, and two drugs in the continuation phase for a total of six months.

The major factor that thwarts the cure is non-compliance and failure to complete the prescribed regimen of drug treatment. A flexible system of delivery can reduce patient non-compliance. Directly Observed Therapy on a daily or intermittent regimen may be necessary for patients who can not, or will not, self administer medications. A detailed description of drug therapy as approved by use in Manitoba can be found in Appendix 1.

Prevention

ISONIAZID (I.N.H.)

Every positive tuberculin reactor has an increased risk of developing active tuberculosis as compared to the normal tuberculin negative population. In order to reduce this risk, it is advisable that individuals with a tuberculin reaction of 10 mm or more of induration (using bio-equivalent 5 TU PPD-S) should receive a single drug, INH 5-10 mgms/kilo per day (maximum 300 mgms. per day). It is given once a day orally for nine months in liquid or pill form. To date, there is no data available identifying Rifampin or any other chemotherapy drug as being an effective agent in tuberculosis prevention.

ABSOLUTE CONTRAINDICATIONS TO INH PREVENTIVE THERAPY

1. Previous INH associated hepatic injury
2. Severe adverse reactions to INH: e.g., drug rash, drug fever, arthritis
3. Acute liver disease of any etiology

The preventive treatment presumably acts by diminishing the bacterial population in "healed," often roentgenologically invisable lesions. This treatment can prevent progressive disease from developing and can reduce future morbidity in high risk groups.

Since in the immediate future it is not practical to perform tuberculin tests on the entire population, or to treat all positive tuberculin reactors, certain priorities must be set, taking into consideration the relative risk of developing active diseases. The opportunity for infecting others (particularly children) and the available resources must be considered. In addition, these priorities must be balanced by the relative risks attached to the use INH.

1. PREVENTIVE TREATMENT IS MANDATORY FOR THE FOLLOWING GROUPS OF POSITIVE TUBERCULIN REACTORS:
   a. PATIENTS WITH INACTIVE tuberculosis who have had active tuberculosis in the past and who have had inadequate therapy, i.e., 9 months.
   b. PATIENTS WITH PRESUMED INACTIVE TUBERCULOSIS who have not previously been diagnosed as having active tuberculosis but who have a positive tuberculin skin test as well as radiological findings consistent with healed adult Pulmonary Tuberculosis.
   c. TUBERCULIN CONVERTORS OF ANY AGE (a conversion is defined as a change in the tuberculin reaction from negative to positive within the previous twelve months). These newly infected individuals are a high risk group especially in the first three years following infection.
   d. TUBERCULOSIS CONTACTS: All close contacts of a reported case of active tuberculosis with a positive tuberculin reaction should receive INH chemoprophylaxis.

      PRIOR TO STARTING ANYONE ON INH PREVENTIVE THERAPY, ACTIVE TUBERCULOSIS MUST BE EXCLUDED BY OBTAINING SPUTUM OR GASTRIC CONTENTS FOR TUBERCLE BACILLI. CONSIDERATION MUST BE GIVEN TO PRESCRIBING INH IN CHILDREN UNDER THE AGE OF 10 WHO ARE INTIMATE CONTACTS OF A CASE OF ACTIVE PULMONARY TUBERCULOSIS EVEN IF THE INITIAL TUBERCULIN TEST IS LESS THAN 10 MMS IN INDURATION.

2. PREVENTIVE TREATMENT IS RECOMMENDED FOR THE FOLLOWING GROUPS OF POSITIVE TUBERCULIN REACTIONS WHO ARE AT HIGH RISK OF DEVELOPING ACTIVE TUBERCULOSIS:
   a. Patients on immunosuppressive therapy
      i) HIV positive serology
      ii) Cytotoxic drugs, radiotherapy, corticosteroids
      iii) Diabetes Mellitus
      iv) Silicosis
      v) Individuals with reticuloendothelial disease such as Hodgkin's Disease or Leukemia
   b. Children with a positive tuberculin reaction who have developed Measles or Whooping Cough. They should receive eight weeks of chemoprophylaxis if they have been treated before. If they have not received any previous treatment, the course of chemoprophylaxis should be extended to twelve months.
   c. Patients who are undergoing a gastrectomy or who have had a gastrectomy in the past.

N.B. Patients over the age of thirty-five years are generally at a higher risk of developing drug-induced hepatitis from INH than they are from developing tuberculosis from contacts with infected people.

BACILLUS CALMETTE-GUERIN VACCINATION (B.C.G.)

The provision of the B.C.G. vaccine for Health Care Workers in the Province of Manitoba has been discontinued. The rationale is the decreased incidence of Tuberculosis in Manitoba from 1940 to 1982. The actual number of cases of newly diagnosed tuberculosis in Health Care Workers is one per year over the past five years. However, proper follow-up for Health Care Workers and students for the tuberculosis infection is essential. That is done in three ways:

1. The tuberculin status is determined at the time of employment or school entry
2. a system of follow-up of tuberculin tests or chest x-rays is developed
3. a system of contact follow-up after discovery of an active infectious case is developed.

Although B.C.G. is no longer used for the majority at risk, it is still suggested by the Medical Services Branch, Ottawa, for newborn Treaty Indians. It offers protection against Miliary Tuberculosis and Tuberculous Meningitis (Appendix 3).

The only other group of individuals who should consider B.C.G. vaccination are Health Care Workers planning to live in Africa, South-East Asia, India and other Third World countries where they will be heavily exposed.

HIV Positive Serology and Tuberculosis

People infected by HIV and Mycobacterium tuberculosis are at a higher risk of developing active tuberculosis. This is how one should approach these situations:

A. INDIVIDUALS WITH HIV POSITIVE SEROLOGY (PLUS/MINUS CLINICAL AIDS)

I. Tuberculin test positive ► 5 mm. (BCG history irrelevant)
   a) Chest x-ray normal — Preventive therapy
   b) Chest x-ray abnormal
      i) Appropriate secretions - negative on smear and/or culture — Preventive therapy
      ii) Appropriate secretions - positive on smear and/or culture — treat for active tuberculosis
   c) Extrapulmonary site - diagnosed by appropriate culture, or biopsy, or clinical presentation — treat as active tuberculosis.

II. Tuberculin negative (2 step) — no previous history available
   a) Anergy screen positive - observe with chest x-ray and follow-up
   b) Anergy screen negative
      See A. I. a), b), c) above
   c) Previous known positive
      See A. I. a), b), c) above

B. PROVEN ACTIVE TUBERCULOSIS

Obtain HIV serology if patient:

a) High risk group
   i) I.V. drug user
   ii) homosexual
   iii) multiple blood or blood product transfusions
   iv) individual from high HIV incidence country
   v) signs of AIDS complex
b) Unusual site(s)
   i) extrapulmonary — especially peritoneal, pericardial, miliary, disseminated, CNS, etc.
   ii) pulmonary — especially diffuse bronchopneumonia; lower lobes

C. TREATMENT

4-drug therapy directly observed for 2 months daily — INH, Rifampin, Pyrazinamide, Streptomycin (Ethamtutol) followed by 2-drug therapy directly observed for 4 months or more twice a week — INH, Rifampin

D. PREVENTION — INH daily for 9-12 months

Part Two

THE FACTS:

Nursing Intervention

The Facts: The Role of the Public Health Nurse in Tuberculosis

For the purpose of this Handbook, other Health Care Workers will be defined as all those directly participating in the care of the patient, whether in hospital or in the community. The Respiratory Hospital has a well researched and well established teaching program for the various levels of Health Care Workers. If the Public Health Nurse is required to teach in a community hospital, she should contact the Tuberculosis Nursing Co-ordinator and all the necessary information, educational aids and advice will be provided upon request. The Tuberculosis Nursing Co-ordinator provides regular In-Service Programs for Provincial and Federal Nurses. Similar programs are offered to City Public Health and the Victorian Order of Nurses.

The Public Health Nurse in a rural or isolated area is more likely to be called upon to provide education for other health workers. The Community Health Worker, for the most part, works under the supervision of the Public Health Nurse and it is that nurse's responsibility to provide whatever information is required by the Worker.

NURSING DIAGNOSIS AND NURSING CARE

The nurse in the community is in a first-line position to consider tuberculosis as a differential diagnosis. Certain criteria raise the index of suspicion that a patient may have active tuberculosis:

- Cough
- Loss of weight
- Fatigue
- Sputum: blood streaked or abnormally excessive in amount
- Night sweats
- Fever
- Pain
- Swollen glands
- A significant tuberculin skin test
- History of exposure to a case of infectious tuberculosis
- Known tuberculosis situation in the local community

The nursing history should include smoking and alcohol history, is patient pregnant, on birth control pills, anti-seizure medication, etc.

The nurse may wish to discuss the patient and his symptoms with the local doctor, Medical Officer of Health, or Nursing Supervisor. If further assistance is deemed necessary, the nurse may call the Respiratory Hospital (Appendix 5).

PROCEDURE TO ARRANGE ADMISSION OF PATIENT TO HOSPITAL

A) ROUTINE

Upon receiving a call from the Tuberculosis Nursing Co-ordinator that a patient in your area has been newly diagnosed with tuberculosis, by either x-ray or biopsy, the Public Health Nurse is responsible for:

a) visiting the patient and his/her family

b) notifying the patient of the diagnosis

c) explaining the disease process

d) discussing the implications, i.e., treatment, hospitalization, time off work, family arrangements

e) arranging for social assistance, if necessary

f) arranging any travel warrants, escorts if the patient is frail or there is a language barrier

g) receiving admitting date from the Admitting Department of the Hospital and relaying this pertinent information to the patient

h) instructing the patient to report immediately upon arrival in Winnipeg to: ADMITTING DEPARTMENT, 820 SHERBROOK STREET, WINNIPEG, TELEPHONE: 787-2309

i) collecting and sending any pertinent documents, x-rays, etc. with the patient or escort

j) notifying Central Tuberculosis Registry (C.T.R.) the expected date and time of arrival of patient (787-2341).

B) THE DIFFICULT PATIENT

There really is no set method for dealing with a difficult patient who refuses admission to hospital/clinic and each worker is expected to use her powers of observation, persuasion, perception and in order to deal successfully with individual situations. Some of the problems commonly encountered are: fear of job loss, alcoholism, fear of unknown hospital surgery, loneliness, distance, different foods, lack of understanding.

Suggestions for solving these problems might be another family member or a friend who would agree to assist the patient or refer to community resources such as Alcoholism Foundation, Social Services, private doctor, Band Council, etc.

In the event all avenues available within the community become exhausted, the Public Health

Nurse must immediately contact the Tuberculosis Nursing Co-ordinator (Appendix 5). The Tuberculosis Nursing Co-ordinator will refer the problem to the Medical Director, Tuberculosis Control. This physician has the authority by virtue of the Public Health Act of Manitoba to activate a warrant for the arrest of the patient in question. This warrant, once activated will be served by the Royal Canadian Mounted Police or the City of Winnipeg Police in the appropriate district. The patient will then be delivered to the Respiratory Hospital under police escort. Enforced institutionalization is a method of last resort.

C) WHAT TO EXPECT ON ARRIVAL AT THE HOSPITAL

The patient will be required by the Admitting Office Clerk to present his/her medical card, social security number, Treaty number and Band. If the patient is an immigrant, he/she should bring his/her card with the naturalization number, ascertain his/her port of entry, next of kin, important telephone numbers.

After the patient leaves the Admitting Office, he/she will be taken to a ward. If a patient has never been in a hospital before, the Public Health Nurse should tell the patient what a hospital ward looks like and that he/she may be required to wear a mask for at least two weeks. It should also be explained that if the diagnosis is confirmed, the hospital stay may be two to three weeks or as long as they feel ill.

D) ISOLATION PROCEDURES

While the patient is in hospital, the isolation procedure is generally applied (Appendix 3).

Travel on an airplane or other public conveyance could be necessary and is covered in detail in the Canadian Lung Association publication "Canadian Tuberculosis Standards 1988."

A short summary is as follows:

- the airline should be notified
- the patient should wear a mask and have a container capable of tight closure for disposal of tissue where cough and sputum is involved
- the adjacent seat should be vacant or a medical attendant to occupy this seat. Other passengers may be seated ahead, across the aisle or behind the patient.

Contact Follow-Up

"Contacts" may be defined as all persons with whom the diagnosed patient (Index) has been in contact — at home, at work or socially for a close and prolonged period of time since the diagnosed patient first developed the SYMPTOMS of tuberculosis. This will be defined and clarified by a nursing history, i.e., development of cough, loss of weight, haemptosis.

The definition of a TUBERCULOSIS CONTACT is useful in establishing priorities for an efficient and effective Tuberculosis Control Program. Resources should be concentrated on valid contacts, not on contacts who are, in reality, casual associates. Points to consider in assessing the validity of contacts:

a) The young are at greatest risk of the infection and the development of disease and should have high priority in contact investigation.

b) The risk of transmission of infection is greatest in the cavitary, sputum smear positive case of Pulmonary Tuberculosis who is coughing.

c) Transmission of infection is most frequent in a closed, warm, dry, non-ventilated environment.

d) Brief or intermittent exposure is less risky while prolonged continuous exposure carries greater risk.

Once a diagnosis of tuberculosis in Manitoba has been made, the Central Tuberculosis Registry informs the local authorities. Subsequently, a list of contacts is usually prepared at the Respiratory Hospital in Winnipeg by the Patient and Family Educator, in consultation with the patient, and then is distributed to the local authorities by the Central Tuberculosis Registry. The Health Care Worker should be alert to contacts found in the community and not previously considered. On rare occasions, it may become the responsibility of the Health Care Worker in the community to prepare, compile and submit the list of contacts.

Procedures for dealing with contacts vary, depending upon the bacillary status of the patient's sputum, the site of disease and the perceived degree of risk of developing tuberculosis.

INDEX CASES

A) PULMONARY TUBERCULOSIS, ACTIVE, BACILLARY ON SMEAR

Is potentially infectious since route of transmission is airborne. Family and work friends who shared the breathing space are at risk.

Procedure to follow once contacts are indentified and located:

Tuberculin skin test and chest x-ray using the four-part x-ray form headed "X-RAY FOR TB CONTROL PROGRAM" (Appendix 4).

The tuberculin test results should be sent to the Tuberculosis Nursing Co-ordinator (Appendix 5).

The chest x-rays are sent to the Manitoba Lung Association (Appendix 5).

If there is a history of a BCG vaccination, chest x-ray only.

If the tuberculin test is significantly positive and chest x-ray negative, INH chemo-prophylaxis is considered or followed by chest x-ray in three months.

If the tuberculin test is negative (non-significant) the skin test is repeated in three months.

Susceptible contacts are sometimes considered for INH chemoprophylaxis for the first three months even if negative skin test.

Tuberculin skin test is repeated on negative reactors in three months.

B) PULMONARY TUBERCULOSIS, ACTIVE BACILLARY ON CULTURE

Procedure to follow if patient is not coughing and not ill:

Tuberculin skin test and chest x-ray are done on close contacts once. If cough is a predominant symptom, widen circle to more casual contacts. Tuberculin skin test and chest x-ray contacts once.

C) PRIMARY TUBERCULOSIS, PLEURAL EFFUSION, TUBERCULOUS MENINGITIS IN CHILDREN

Tuberculin skin test and chest x-ray are done on all individuals close to case, as you are trying to find how this person was infected. Discuss with Tuberculosis Nursing Co-ordinator before widening the circle of contacts.

D) EXTRA-PULMONARY TUBERCULOSIS — LYMPH NODE, KIDNEY, BONE, ETC.

These forms of tuberculosis are not usually infectious and need not be investigated except in extraordinary circumstances.

Results of the first contact follow-up testing are to be completed within thirty days following the initial diagnosis and sent to the Tuberculosis Nursing Co-ordinator (Appendix 5). Results are reviewed by the Tuberculosis Nursing Co-ordinator and the Medical Director, Tuberculosis Control and if indicated medication is initiated.

CONTACT FOLLOW-UP is repeated in three months under the following circumstances:

— if previous skin test is negative — repeat
— if skin test is positive and chest x-ray negative and INH is not suggested, repeat chest x-ray
— if contact has a BCG, repeat chest x-ray.

Test results are submitted to the Tuberculosis Nursing Co-ordinator (Appendix 5). A decision is then made regarding treatment or discharge from the Clinic. Completed copies of contact lists will be returned to the Health Care Worker.

FIELD ADMISSION TO THE TUBERCULOSIS CONTROL PROGRAM (Appendix 4)

It is not infrequent for known contacts to be placed on a nine-month regimen of INH chemoprophylaxis based solely upon tuberculin tests and x-rays done in the community. The patient may not be required to attend at the Respiratory Hospital. In this case, the form, "Field Admission to the Tuberculosis Control Program" is completed by the Public Health Nurse and sent to the Central Tuberculosis Registry (Appendix 5). A supply of drugs will be sent to the Public Health Nurse and monitored by the Central Tuberculosis Registry. The Public Health Nurse will develop a plan of nine months of treatment in consultation with the patient and his family. Any problems should be reported by the Public Health Nurse to the Nursing Co-ordinator (Appendix 5). After three months of medication, the patient will be required to have a chest x-ray done locally, using the x-ray form (Appendix 4), and submit it to the Manitoba Lung Association (Appendix 4). The results will be forwarded to the Public Health Nurse for her records. After nine months of treatment, another chest x-ray is done locally, again using the four-part form. Assuming all chest x-rays are negative, the patient will be required to have another x-ray at twelve months and twenty-four months after completion of his nine-month drug program. Assuming that these chest x-rays are negative, the patient is discharged from Public Health Nursing supervision.

Treatment Methods

The only method of treatment being used at this time is medication (Appendix 1). There are two general methods of providing medication to a person with tuberculosis:

a) Self-Administered
b) Directly Observed

SELF-ADMINISTERED

The traditional approach is to give the infected person the medications, which they take on a daily basis by themselves. There is a program at the Respiratory Centre which each patient, assessed as able to participate in, is taught to self-administer medication. This program allows the eligible patient to:

— keep pills at bedside
— take pills independently at regular intervals as established with the patient and the nurse.

The hospital nursing staff routinely check and count these pills to assure the patient understands his responsibility and is fulfilling it. If a patient returns to the community on this program, the Public Health Nurse will be advised. It then becomes her responsibility to do periodic checks and assist the patient in adjusting the regimen to his home setting. Any seemingly insolvable problems should be reported to the Tuberculosis Nursing Co-ordinator (Appendix 5). AN EARLY VISIT FROM THE PUBLIC HEALTH NURSE IS OFTEN REVEALING AND IS PERHAPS THE KEY TO SUCCESS.

DIRECTLY OBSERVED THERAPY

The medication can be given twice a week under supervision. The nurse may appoint a Community Health Worker or other trusted delegate to actually administer the medication, but the ultimate responsibility remains with the nurse. The pills are given to the patient and he/she is observed to make certain the medication is swallowed. A record of this is noted on his OUT-PATIENT CHEMOTHERAPY RECORD sheet (Appendix 4). No changes should be made in this regimen unless directed by the Tuberculosis Nursing Co-ordinator. Complications are uncommon, but the worker must monitor for symptoms such as loss of weight, haemoptysis, or fever attributable to tuberculosis, or to the side effects of anti-tuberculosis drugs (nausea and vomiting, jaundice, or rash) and report to the Tuberculosis Nursing Co-ordinator.

Although the above procedures may seem complicated, the Directly Observed Treatment is not a penalty but rather a positive alternate method of treating a long-term chronic disease.

ADVANTAGES OF DIRECTLY OBSERVED THERAPY

Total treatments are fewer for the patient
Cheaper
Risk of drug toxicity is minimized
More effectively supervised

TOTAL LENGTH OF TREATMENT FOR BOTH METHODS

One month daily drug therapy (usually in the hospital) initially
Five months (continuation phase)

DRUGS AND ALCOHOL

Tuberculosis patients who are heavily involved in other drugs and/or alcohol present a special problem. With these patients, the treatment is still to ensure a cure for tuberculosis whether or not the patient accepts help for his other problems. This will likely require extra vigilance and patience on the part of the Health Care Worker.

BUT the most IMPORTANT of all is at the end of this six month regimen, you have a well-treated individual who has been able to stay in his community and retain his family and social ties. Although there will be some follow-up for the next two years (yearly x-rays), he is free to resume a normal life.

Supervision

SUPERVISORY TECHNIQUES

The Public Health Nurse should determine when and how the patient takes his drugs, any potential side effects such as loss of weight, changes in eating patterns, rashes, gastrointestinal complications or any unusual medical changes. Any unusual signs and symptoms should be reported to the Tuberculosis Nursing Co-ordinator (Appendix 5), for referral to the appropriate medical services. In order to enhance the patient's compliance, he needs to feel he is a PARTNER in his treatment. If possible, he should be given some choices and make some decisions.

One last word on drug therapy and the Public Health Nurse. When supervising long-term drug regimens, the nurse must be realistic and perhaps even cynical about the diligence of all patients to maintain the

prescribed regimen. It is not unheard of for patients to say all the right things and have the correct number of pills remaining and yet in actual fact to have taken very few, if any, of them. Various ploys have been known. For example, flushed down the toilet, take a three-day dose in one gulp, etc. This type of problem is extremely difficult to detect and may only be solved by the Directly Observed Therapy route. In any case, it should be discussed with the Tuberculosis Nursing Co-ordinator as soon as the Public Health Nurse becomes suspicious. This, of course, requires REGULAR VISITS AND ASTUTE QUESTIONING.

There are a few patients who are so completely unreliable that it is necessary for alternate ambulatory drug regimens. It may be necessary for the Public Health Nurse to completely supervise the anti-tuberculosis medications either in the home or the Clinic.

HELPFUL HINTS FOR ADMINISTERING MEDICATIONS

- Take pills with meals
- Crush tabs and mix in jelly or pudding
- Sprinkle Rifampin over toast with jam
- Liquid drugs (INH) syringed into mouth
- Take a "Life-Saver" following oral medication
- Take pills at home rather than work

Experience has taught many nurses that it is valuable to "chat" with the patient for a few minutes after he/she has swallowed the medication. If he/she has concealed the pills under his/her tongue or in the side of his/her cheeks, it will become rapidly apparent during conversation.

Teaching

It is difficult to establish a static chronological order for teaching. In some ways, it resembles the chicken and the egg dilemma. One of the aspects of prevention is teaching of community and other Health Workers. However, in the presence of one or more active patients within a community, the teaching program will need to be adjusted. For the purpose of this manual, we will focus primarily on those patients and their immediate families. The community and other Health Workers are secondary.

THE PUBLIC HEALTH NURSE TEACHING THE FAMILY

While the patient is in hospital, the Public Health Nurse must recognize that the family will be more receptive to learning and to playing their individual roles in the recovery of the patient if they are kept informed, and in touch with their loved one while he/she is away. It is, therefore, necessary to consider assisting the families in this endeavour as an integral part of your teaching program.

1. Explain, in terms the family can understand, the nature of tuberculosis and the possibilities of infection they themselves face, and discuss and arrange for contact follow-up for each close family member.

   RESULTS OF CONTACT FOLLOW-UP ARE TO BE SUBMITTED TO THE TUBERCULOSIS NURSING CO-ORDINATOR (Appendix 10) WITHIN THIRTY DAYS OF DIAGNOSIS.

2. Assess the general family situation, looking for signs of distress, such as:
   - insufficient, inadequate food
   - heavy drinking
   - cramped quarters
   - poor heating
   - wife/child abuse
   - mechanism for disposal of garbage, human excreta, etc.
   - availability of adequate finances, clothing, soap
   - drugs: prescribed, patent medicine and illegal
   - do they understand and follow the instructions for taking drugs
   - is there at least one responsible person who might assume the role of monitoring the medication therapy.

3. While there, observe and assess the general health of everyone living in the house and note any suspicious symptoms exhibited, for example, flu-like illness, loss of weight, cough, haemoptysis, fever.

4. Encourage the family members to stop or curtail smoking particularly in the house when the patient returns. If the Health Care Workers perceive there are cultural or religious beliefs that are in conflict with the accepted treatment, please notify the Tuberculosis Nursing Co-ordinator.

5. It is the responsibility of the Public Health Nurse to design and implement a program of supervision for each patient to meet his unique need, i.e., weekly, monthly or telephone visits. The location of this visit can be at home, office or any other mutually convenient site.

TEACHING THE PATIENT WHEN HE RETURNS HOME

By the time the patient returns home, the details of his prescribed drug regimen usually have been decided. The Tuberculosis Nursing Co-ordinator will notify the Public Health Nurse. The patient will have been taught by the Patient and Family Educator and the Staff Nurses, while in hospital, how to follow this particular regimen. However, this teaching will need to be reinforced by the Public Health Nurse and some changes may be required once the patient is back in the community. Problems that require changes should be reported to the Tuberculosis Nursing Co-ordinator (Appendix 5) without delay.

Unlike other community based health programs, recording by the Public Health Nurse for the patient with tuberculosis is an integral part of his continuing care. The record will become a helpful guide to not only the nurse but also the Respiratory Hospital physician and may well be used as a basis upon which to plan the on-going treatment.

IMPORTANT FACTORS TO RECORD AND SEND TO THE TUBERCULOSIS NURSING CO-ORDINATOR:

— haemoptysis
— reactions to drugs
— failure to take drugs
— failure to keep appointments
— other medical/emotional problems
— family problems
— overdoses
— new address

Discuss with the patient the potential hazards of abusing other substances such as alcohol, illegal drugs, etc. Explain to him as often as necessary how these illicit substances may delay and perhaps even inhibit his return to normal health through healing of affected lung. The patient has to be helped to apply the principles of good nutrition, good hygiene and general good health practices that he/she was taught at the Respiratory Hospital.

Encourage the patient to return to work and/or school, according to the recovery plan established by the physician while the patient was in the Respiratory Hospital. The Public Health Nurse should emphasize the necessity of returning for follow-up medical appointments as arranged prior to his discharge. This information will have been sent to the Public Health Nurse on the INTENT TO DISCHARGE form (Appendix 4). If the patient refuses to return, as required, the Public Health Nurse will notify the Tuberculosis Nursing Co-ordinator.

THE COMMUNITY, SCHOOL, BUSINESS, ETC.

Teaching in the community can be considered from two aspects:

a) case finding, i.e., those members of the community who have been in close and prolonged contact with the patient (as defined under Contact Follow-up)

b) general information to promote understanding within the community, support for diagnosed person and his/her family.

Such information may be useful to allay fears and recriminations and also to allow others to recognize early signs and symptoms of possible infection in the future. One of the greatest fears of a diagnosed patient is that he has inadvertently been responsible for infecting someone he loves within his family or someone within his community. The community shares this fear and may display open hostility or total ex-communication when the patient returns.

The Public Health Nurse may be able to act as liaison here. She may also wish to become a continuing advisor to someone like the Mayor, the Chief, local clergy or other individual who can communicate more readily with the parties involved. There are various educational aids available for the Public Health Nurse upon request from the Tuberculosis Nursing Co-ordinator (Appendix 5). The Tuberculosis Nursing Co-ordinator is always available as a resource person to suggest approaches and education programs to assist the Public Health Nurse.

Ambulatory Clinic

The Public Health Nurse should view the Ambulatory Clinic as her resource centre for dealing with the health care of this patient. If no problems exist she will likely not need to contact the Clinic often, if ever.

However, for any problems, no matter how small, the staff at the Ambulatory Clinic are prepared and willing to assist the Public Health Nurse. In order to contact the clinic, she should call the Tuberculosis Nursing Co-ordinator (Appendix 5). All the resources of the Clinic will be put at her disposal.

Immigrants and Refugees

Because tuberculosis is a common disease in many countries, people from these countries arrive in Canada already infected with Mycobacterium Tuberculosis. Therefore, with the stress of arriving in a new country, health status declines and they break down with active tuberculosis.

The vast majority of immigrants and refugees tend to stay in urban areas. However, occasionally they may decide to settle or be relocated in a rural area. It is, therefore, essential that Public Health Nurses in both urban and rural areas of Manitoba are aware and diligent in observing and reporting symptoms which may be tuberculosis.

Notification of immigrants with a diagnosis of inactive tuberculosis is sent to the Public Health Nurse. It then requires the nurse to set up an appointment at the Respiratory Hospital. This can be done by calling the Appointment Clerk, Ambulatory Care, Respiratory Hospital (Appendix 5). She will require the patient's name, address, port of entry and date of entry.

The IMMIGRANT has been told in the country of origin that a requirement of coming to Canada is to be followed for tuberculosis and that the Public Health Department will be visiting after their arrival in Manitoba and asking them to attend the Respiratory Hospital.

REFUGEES present a different and MORE complicated problem. Seldom are accurate health records available. Seldom have they spoken to any Canadian Official in the country of origin. Frequently they are of poor general health and almost always they are frightened of being expelled if any problems are detected. For this reason, all members of the health care profession must be alert to signs and symptoms of tuberculosis, or for that matter any disease, during any contact with refugees. If the Public Health Nurse becomes aware of a possible candidate for investigation of tuberculosis, he/she should call the Tuberculosis Nursing Co-ordinator (Appendix 5) to discuss the most effective method of handling the situation.

If possible, a health interpreter, able to speak the patient's first language, should be used.

Contact Follow-Up

FOR NATIVE CANADIANS

The success or failure of contact follow-up often rests with the local Nurse or Community Health Worker. Without their support and preparation, the attendance at any clinic/contact follow-up is likely to be negligible. When a community contact follow-up is slated, the Nurse will be contacted approximately two months prior by her Supervisor to notify her of the date and time. The Nurse/Health Worker is responsible for notifying the community and ensuring a good turnout.

Suggested ways of promoting contact follow-up in a community:

- arrange for convenient location and be sure it is available
- work with the Chief
- notify special groups, i.e., tuberculosis contacts of a recent case
- allay any fears by increasing understanding of tuberculosis by education (individual and group) and counselling
- arrange for an interpreter
- notify local school and seek co-operation of the teacher(s)
- announce at local Bingo and other social events
- use Manitoba Lung Association posters
- use the local radio, television
- arrange transportation.

Any problems the nurse may encounter regarding the arrangements should be discussed with the Supervisor and if problems cannot be solved at that level, call the Tuberculosis Nursing Co-ordinator (Appendix 5).

FOR OTHERS

Similar contact follow-up is, from time to time, provided for other areas of the population. This contact follow-up is arranged by the Nursing Co-ordinator under the direction of the Medical Director, in consultation with the Medical Officer of Health and the Senior Public Health Nurse of the area. Most

frequently, tuberculin skin testing of the specific population is undertaken. Any positive reactors will be required to have a chest x-ray. Referral to the Manitoba Lung Survey's team may be considered.

The local Public Health Nurse is an integral and often crucial member of this survey team. Much of the local organization is left to her, as well as the teaching, supervision, follow-up, etc.

Author's Note

We, in Manitoba, can be very proud of our past success in the diagnosis and treatment of tuberculosis. Statistics confirm that the incidence of all types of tuberculosis have steadily declined based on per capita figures. A large part of this success can be attributed to the dedication and diligence of the Medical Officers of Health, the Public Health Nurses and other Community Health Workers.

Thanks to medical advances, the disease, once called the "scourge of humanity," has been reduced to a curable illness which no longer destroys individuals, families, and indeed, entire communities. However, it is the responsibility of today's health care teams and those of the future to resist the temptation to become complacent. We can only maintain and increase our success through constant unwavering vigilance at every level of the health care professions. It is with this thought in mind that this Handbook has been prepared. It is hoped that it will be of encouragement and assistance to those special people who chose to offer their professional knowledge to the community through one of our Public Health Agencies. It is our further hope that we will be able to maintain a constant flow of current and pertinent information to Public Health Nurses and Health Care Workers.

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Part Three

APPENDIX

Treatment Methods

APPENDIX 1

DRUGS USED IN TREATMENT AND PREVENTION OF TUBERCULOSIS IN ADULTS/CHILDREN

DRUG	DAILY DOSE	TWICE OR THRICE WEEKLY DOSE	SIDE EFFECTS: MORE FREQUENT	SIDE EFFECTS: LESS FREQUENT	MONITORING	REMARKS
ISONIAZID (INH) Tablets 100 mg & 300 mg	5-10 mg/kg (usual dose: 300 mg)	15 mg/kg	Hepatitis Hypersensitivity	Psychosis Convulsions Loss of Memory Arthralgia Peripheral neuritis	Symptoms SGOT	1. Phenytoin (Dilantin) toxicity. 2. Pyridoxine (25-20 mg) should be given if dose over 300 mg to prevent peripheral neuritis 3. With Disulfiram (Antabuse), may lead to behaviour and coordination disturbances
	10-20 mg/kg**					
Liquid	10 mg/kg (usual dose: 300 mg)					
RIFAMPIN (RMP) Capsules: 150 mg 300 mg	10-20 mg/kg (usual dose: 600 mg)	10-20 mgm/kg (usual dose: 600 mg)	Liver toxicity	Hypersensitivity Purpura Renal shut-down (rare) Gastroenteritis Leukopenia (rare) Loss of memory Arthralgia	SGOT/SGPT Platelet count Bilirubin	1. Decreases effecitveness of the contraceptive pills 2. Increases anticoagulant drug requirement 3. An orange-red discolouration of seat, tears, urine, saliva and feces is harmless
	10-20 mg/kg**	10-20 mg/kg**				
PYRAZINAMIDE Tablets: 500 mg	15-30 mg/kg (usually not over 2 gm daily)	30-50 mg (usually not over this dose)	Hyperuricemia Arthralgia	Hepatotoxicity Gastric irritation Photosensitivity	SGOT/SGPT Uric acid	Benemid or Allupurinol to reduce serum uric acid
	15-30 mg/kg**	50-70 mg/kg**				
ETHAMBUTOL Tablets: 100 mg 400 mg	15-20 mg/kg (usually 15 mg/kg)	50 mg/kg	Retrobulbar neuritis (rare 15 mg/kg)		Baseline visual acuity and colour perception	Patient should report any visual changes to physician immediately
	15-25 mg/kg**	50 mg/kg**				
**Treatment in INFANTS AND CHILDREN						
STREPTOMYCIN (SM) Vials: 1 gm 4 gm	15-20 mg/kg (Usually lgm given 2-5 times weekly)	15-20 mg/kg	8th-nerve toxicity (especially vestibular Hypersensitivity reactions Paresthesia, perioral (not significant)	Mildly nephrotoxic	Symptoms BUN Hearing tests	1. If renal impairment, monitor carefully 2. Reduce dosage in older patients 3. In children less than 14 years, after three weeks daily therapy, reduce dose or give intermittently
	20-40 mg/kg (IM)**	20-40 mg/kg**				

DRUGS USED IN TREATMENT AND PREVENTION OF TUBERCULOSIS IN ADULTS/CHILDREN

DRUG	DAILY DOSE	TWICE OR THRICE WEEKLY DOSE	SIDE EFFECTS: MORE FREQUENT	SIDE EFFECTS: LESS FREQUENT	MONITORING	REMARKS
CAPREOMYCIN (CAP) Vials: 1 gm	15-10 mg/kg 15-30 mg/kg IM**		(both vestibular and auditory Renal toxicity (more marked than with Streptomycin or Kanamycin) Painful site of injection Eosinophilia (not adverse sign in itself)	Hypokalemia Hepatitis	Baseline audiogram Symptoms monthly SGOT/SGPT BUN and urinalysis	
CYCLOSERINE (CS) Capsules: 250 mg	15 mg/kg (usual dose: 500-1000 mg) 10-20 mg/kg**		Psychological changes Convulsions			1. Avoid in patients with history of epilepsy, mental instability. 2. Suicidal threats must be taken seriously. 3. Phenobarbital, phenytoin (Dilantin), and/or concomitant pyridoxine to control convulsions.
KANAMYCIN (KAN) Vials: 500 mg/2 ml, 1 gm/3 ml, 75 mg/2 ml	15-20 mg/kg (usually 0.5 to 1.0 gm) 15-20 mg/kg IM**		8th-nerve toxicity (mainly auditory; most toxic of injectables Severe pain and nodules at injection sites	Renal toxicity (rare)	Initial and monthly audiograms	Most toxic of these drugs to 8th nerve auditory; rarely used
ETHIONAMIDE (ETH) Tablets: 250 mg	15-30 mg/kg (up to 1gm) 15-20 mg/kg**		Gastrointestinal disturbance Liver toxicity	Hypersensitivity (rash) Neurotoxicity (various)	SGOT/SGPT	Divided doses may reduce gastrointestinal irritation. Metallic taste. Avoid in pregnancy

All drugs given by single dose except cycloserine, which is given in divided doses; it may be necessary to give ethionamide in divided doses

**Treatment in infants and children

WARNING: Every effort has been made to ensure the accuracy of the dosages of drugs and the prescribing information included in the Canadian Tuberculosis Standards (1988). Nevertheless, those prescribing these drugs are urged to follow carefully the manufacturers' printed instructions.

SIX-MONTH REGIMEN FOR ACTIVE TUBERCULOSIS

As of February 1, 1990 there will be a change in the recommended therapy for active tuberculosis. At the present time in the majority of cases, the regimen consists of a 9-month period of daily therapy which the patients take on their own. With the new treatment regimen the principle will be that all patients with active tuberculosis will receive their treatment under direct observation. The rationale for this change is that patient compliance is the most important factor in determining whether a treatment program is successful. The recommendations of the International Union Against Tuberculosis and Lung Disease, the Canadian Lung Association, and the American Thoracic Society, are that treatment regimen should be 6 months of totally directly-observed therapy; the initial phase, daily with 4 drugs for 2 weeks, followed by 6 weeks twice-weekly therapy of 4 drugs, followed by a continuation phase of twice-weekly therapy with 2 drugs. Thus, in Manitoba the treatment recommendations for tuberculosis will be:

Duration:	**Drugs:**	**Doses:**
2 weeks	**Daily** INH, Rifampin, Pyrazinamide and Streptomycin (or Ethambutol)	14
6 weeks	**Twice weekly** INH, Rifampin, Pyrazinamide and Streptomycin (or Ethambutol)	12
18 weeks	**Twice weekly** INH and Rifampin	36
Total: 26 weeks		62

Doses for twice-weekly treatment are as follows:

INH 1200 mgm oral
Rifampin 600 mgm oral
Pyrazinamide 1500 mgm oral
Streptomycin 750 mgm intramuscular
Ethambutol 2400 mgm oral

The essentials of this regimen are:

1. it is entirely directly observed,
2. the total number of doses is reduced,
3. the total cost is reduced.

Because the treatment will be entirely directly-observed, patient-defaulting will be detected early.

This will not put an extra load on the Public Health Services in the province since it is anticipated that in 1990 that there will be fewer than 100 cases in Manitoba, with the number of cases slowly decreasing yearly. Of the active cases 60-65% probably will live in Winnipeg; 30% on Indian reserves and the remaining 10% scattered throughout rural Manitoba.

In Winnipeg, the ambulant portion of the treatment will be supervised almost entirely at the Respiratory Hospital or in satellite areas such as the Mount Carmel Clinic, the River Avenue Clinic, Hope Centre and on occasion by City Public Health Nurses and V.O.N. On Indian reserves, the patient will be managed by the Community Health Nurses. On rare occasions, a private physician may be asked to assist in the treatment program especially in rural areas.

Appropriate and uniform data collecting forms are being designed so that attendance of patients for treatment can be recorded and the data returned to the Central Tuberculosis Registry for compilation and evaluation.

As with any recommended treatment regimen, these are general guidelines for the majority of cases. There will always be a need to develop individualized regimens to meet the needs of specific problems, such as drug resistance, allergy to one or more of the medications, social or behavioural reasons. However, the majority of cases should be started on the directly-observed regimen since it provides the best method of ensuring a complete cure. For those individuals whose regimen is different than the recommended regimen, the length of treatment will need to be individualized and will likely be for at least 9 months or longer, especially if INH or Rifampin are not included in the entire program.

EXTRA-PULMONARY TUBERCULOSIS:

Although the data for Extra-Pulmonary Tuberculosis are scanty, the above described treatment regimen will be used for cases of Extra-Pulmonary Tuberculosis as well. Individually designed regimens may be necessary for the more difficult clinical problems.

TUBERCULOSIS IN CHILDREN:

The accepted treatment regimen for tuberculosis in children will be the same as for adults, the dose modified according to weight in kilograms*. For uncomplicated Primary Tuberculosis in children, 3-drug regimen in the initial phase, followed by 2 drugs will be considered adequate.

*Dose Modified for Children

INH 15 mgm/kg
Rifampin 10-20 mgm/kg
Ethambutol 50 mgm/kg
Streptomycin 20-40 mgm/kg
Pyrazinamide 50-70 mgm/kg

Special Considerations

TUBERCULOSIS DURING PREGNANCY

Tuberculosis should be treated without delay when discovered during pregnancy. Streptomycin and other injectable anti-tuberculosis drugs are toxic to the fetus and should be avoided if possible. INH, Ethambutol and Rifampin cross the placental barrier but have not been shown to have teratogenic effects. Therefore, where feasible, tuberculosis during pregnancy should be treated with INH and Rifampin throughout plus Ethambutol in the initial phase.

RENAL DISEASE

If possible, patients with renal failure should not be given any anti-tuberculous medication that have nephrotoxic effects or that are cleared by the kidneys. Drugs in these categories include Streptomycin, Kanamycin, Capreomycin, Ethambutol and Cycloserine. If drug resistance or toxicity requires the use of these, blood levels must be obtained to permit appropriate changes in dose or in the interval between doses. Unpublished data from a limited number of patients suggest that the nine month, INH-Rifampin regimen with Ethambutol during the first two months, works well in renal transplant patients. These patients should be carefully followed for relapse after therapy is complete.

HEPATIC DISEASE

Mild hepatic dysfunction does not necessarily influence the choice of drugs. However, monitoring the liver function is important. Elevations in the serum SGOT or SGPT to three to five times normal should lead to a reassessment of the situation. Regimens may be continued, stopped, interrupted or changed as a result of this assessment.

SPECIAL CONSIDERATIONS

Patients with hepatic failure associated with encephalopathy or hepatocellular damage with a persistent SGOT elevation of greater than six to eight times baseline should be treated with Streptomycin and Ethambutol, but a third drug will be required.

Isoniazid or Rifampin may be tried cautiously initially in lower doses but should be stopped if liver function deteriorates. If liver function tests normalize, INH and Rifampin can be increased to full dosage.

EXTRA-PULMONARY TUBERCULOSIS

Short course chemotherapy for Extra-Pulmonary Tuberculosis has not been evaluated in large-scale, prospective, controlled studies as it has for Pulmonary Tuberculosis. This is in part due to the variety of anatomic sites involved, differences in natural history of disease in these sites, potential difficulties in bacteriologic or histologic confirmation prior to treatment, difficulties in assessing response to therapy, and inability to collect enough patients with Extra-Pulmonary disease in one geographic location for study.

Extra-pulmonary sites of disease usually contain smaller numbers of tubercle bacilli than pulmonary sites and pharmacokinetic studies have indicated that first-line anti-tuberculous drugs, especially INH and Rifampin, penetrate virtually all extra-pulmonary sites at levels well above the minimal inhibitory concentrations for M. Tuberculosis. Hence, with the rare exception of "protected foci" where anti-microbials may not penetrate (e.g., sequestrum in osteomyelitis, or immunosuppressed patient, there is reason to believe that a six month treatment regimen would be effective for treatment of Extra-Pulmonary Tuberculosis.

Tuberculin Skin Testing

TEST PROCEDURE

The test is performed by injecting 0.1 ml of 5 TU PPD to the upper third of flexor surface of the forearm. Hold the syringe horizontal to the arm, bevel up, insert the needle intradermally and inject the material. A white elevated area, or wheal, should be produced. If the first injection is lost outside the skin, a second injection can be given an inch or so diagonally below the first site using a clean needle.

READING AND RECORDING THE TEST

The reaction should be read on the second or third day after administration (i.e., 48 or 72 hours).

Readings should be made in a good light with the forearm slightly flexed at the elbow. The basis of reading is the presence or absence of induration determined by inspection and/or palpation.

One effective way of measuring the induration is to close your eyes, feel for a swelling, mark with a pen, note measurements and report largest reading in millimeters.

ORDERING 5 TU PPD

Testing material can be obtained by contacting the Tuberculosis Control Service (Appendix 10).

TWO-STEP TUBERCULIN TESTING (Booster effect)

It has been reported, in the literature, that in individuals over 35 years of age, who were infected several years ago with tubercle bacilli, the response to the tuberculin may be negative or equivocal. These individuals should be retested within 1-2 weeks. A positive reaction may occur due to the presence of newly recruited immunocompetent (T) lymphocytes. These individuals must be considered as tuberculin positive, and not as a tuberculin convertor.

TESTING OF CONTACTS

DIAGNOSIS	CONTACTS AT RISK	WHAT TO DO	FOLLOW-UP
Pulmonary Tuberculosis Active, Positive Smear	Family Work	Tuberculin Skin Test Chest x-ray.	If Tuberculin Test significantly positive, chest x-ray negative — consider INH or chest x-ray in 3 months. If skin test negative, repeat in 3 months
		If known B.C.G.	Do a chest x-ray
Pulmonary Tuberculosis, Active, Bacillary on Culture.	Family If cough predominant, widen circle.	Tuberculin Skin Test Chest x-ray.	Do once. If positive, chest x-ray negative, consider INH.
Primary Tuberculosis Pleural Effusion TB Meningitis, in children.	Family	Tuberculin Skin Test. Chest x-ray.	Discuss with Nursing Co-ordinator before widening circle of contacts.
Extra-Pulmonary Tuberculosis. Lymph Node Kidney Bone			No Follow-up needed except in extraordinary circumstances.

Procedure for Obtaining a Specimen of Gastric Secretions

PURPOSE: To obtain a fresh uncontaminated gastric aspirate for use in diagnosis and treatment.

EQUIPMENT

1. Nasogastric tube
2. 50 ml catheter tip syringe
3. 30 ml sterile distilled water or normal saline if necessary
4. Specimen container

KEY POINTS

Wear a mask if specimen is for acid fast bacilli

Fasting since midnight

Early morning specimen

PROCEDURE

1. Explain procedure to patient and screen for privacy
2. Wash hands
3. Insert pre-chilled nasogastric tube
   Patient in Fowler's position

   Do not give any water when inserting tube
4. Withdraw gastric contents and place in container

   If no gastric juice is obtained, give 30 mL of sterile distilled water or normal saline. Withdraw it in 15 to 20 minutes and place in container
5. Withdraw tube if appropriate and make patient comfortable
6. Send specimen to appropriate laboratory

   Label specimen and attach requisition, indicating examination to be done

   Smears on gastrics must be requested
7. Rinse equipment

B.C.G. Vaccination

B.C.G. vaccine, an attenuated bovine tubercle bacillus, is administered to susceptible populations in order to stimulate the production of cellular immunity. Successful vaccination affords protection against the lymphohaematogenous spread of the tubercle bacillus, during a subsequent "natural" infection and therefore greatly reduces the incidence of Tuberculous Meningitis and Disseminated (Miliary) Tuberculosis. This immunity lasts at least 10 years and probably longer.

PROCEDURE

Cleanse the outer surface of the upper (deltoid) arm. Use a tuberculin syringe, 26 gauge needle (bevelled side of the needle facing up) and inject 0.1 ml at site intradermally. DO NOT GIVE SUBCUTANEOUSLY.

Babies under 30 days, 1/2 dose (0.05 ml). Babies over 30 days, a full dose (0.1 ml).

REACTION

In one to three weeks, a small papule forms, followed by a bleb. This will break and drain and form a small 5 mm scar. If no scar is noted within two months, repeat the B.C.G. ONE time. when a B.C.G. vaccination is successful, note on the immunization record BCG^{T}.

CONTRAINDICATIONS:

Do not vaccinate individuals suffering from general malaise or conditions such as measles, whooping cough, eczema. Do not combine B.C.G. with other vaccinations for diphtheria, poliomyelitis, etc. (wait an interval of 4 weeks). Do not vaccinate those who have altered immune mechanism (e.g., as a result of taking steroids, cystotoxic drugs or haematological disorders).

ORDERING B.C.G.

B.C.G. vaccine is available in 10 dose vials and can be ordered from the Central Tuberculosis Registry (Appendix 10).

Staff Surveillance Guidelines

HOSPITALS, CLINICS, HEALTH AGENCIES

The core of the program will consist of tuberculin testing the appropriate personnel and then following a set routine depending upon the results.

1) New employees — determine status of tuberculin reactors and B.C.G. vaccination by history. If no documented history is available, tuberculin test individual by using Mantoux test 5 TU bioequivalent to PPD-S.
   a) If test result positive — ensure that active tuberculosis is not present by obtaining chest x-ray and sputum examination if possible. If tests are not available refer individual to appropriate specialists.
   b) If test result negative, regular routine tuberculin testing program is to be established.

2) Regular routine testing
   a) The interval between tests will vary but should never exceed 12 months for individuals with patient contact.
   b) For the very high risk groups as documented previously, this interval should be no longer than every 6 months. If conversion of the tuberculin test from negative to positive occurs, active tuberculosis must be excluded by chest x-rays and sputum examination. If the latter two tests are not available, referral to an appropriate specialist is essential. INH preventive therapy must be considered if active disease is not present.
   c) Regular chest x-ray examination in previously positive patients is not warranted for tuberculosis and chest x-rays should be done for symptoms only.

3) Contact follow-up of infectious cases should be managed according to the practice of the local public health authority.

The cost-benefit of establishing an intricate testing and follow-up program within a risk occupation has been examined in the literature. Even with the declining rate of tuberculosis, infection remains high in certain occupations. The risk of developing disease is highest in the first year after contact. Thus identifying newly infected individuals and employing preventive treatment justifies the cost of worker surveillance.

Guidelines for Patients — At the Respiratory Hospital

A. GENERAL COMMENTS:

a) No smoking on ward by patients or visitors
No alcoholic beverages in the building

b) Patients are expected to be on their own ward by 2200 hours (10:00 p.m.)
Patients must let their nurse know before leaving the ward where they can be located. They should listen to overhead paging as they may be called back to the ward.

c) Visiting hours on the ward are from 2:00 p.m. to 8:00 p.m.

d) Patients are to attend films and meetings — the Nurse or Physiotherapist will advise of the location.

e) Sputum positive or suspect Pulmonary Tuberculosis patients are not admitted to the same room as a non-tuberculous patient.

B. SPUTUM SMEAR POSITIVE PULMONARY TUBERCULOSIS/SUSPECT SPUTUM SMEAR POSITIVE PULMONARY TUBERCULOSIS PATIENTS

a) Must wear a mask when visitors or staff enter their room. Also, masks are to be worn:
   — when patient leaves the room for any reason
   — are being interviewed
   — are having treatment

   Masks should cover both the nose and mouth and should be changed frequently throughout the day. Masks are worn for approximately two weeks.

b) During this approximate masking period, patients may:

NOT GO TO THE MAIN FLOOR except for tests and treatment

NOT GO TO THE CAFETERIA

c) After approximately two weeks of anti-tuberculosis therapy and if sputum shows a reduction in tubercle bacilli, patients may, if the clinical situation warrants:

— not wear the mask
— visit on the main floor
— use the Cafeteria
— go to the different therapy departments, e.g., Physio, O.T.

d) Suspect Pulmonary Tuberculosis patients wear a mask until 3 sputa are reported as negative on smear.

APPENDIX 4

Computer Print-Out

This is a MONTHLY sheet, sent to the Public Health area, indicating those on active treatment, drug dosage, when next drug supply is due, x-ray necessary, etc. If the Print-out indicates "DRUGS OVERDUE"

a) Call Central Tuberculosis Registry (Appendix 10) for update and
b) Public Health Nurse may be requested to visit home to ascertain if patient is having problems.

Sanatorium Board of Manitoba

MONTHLY TREATMENTS AS AT 29/04/84

CHART NUMBER	NAME	DRUG	PRESCR. DOSAGE	SUPPLY ISSUE MON	START DATE	STOP DATE	LAST ISSUE	REORDER DATE	REMARKS
2345678	John Smith No Town Manitoba	INH	300 mgm dy	3	11/83	11/84	2/84	5/84	
345678	Joan Broan RR2 Snowtown	INH RIF	300 mgm dy 600 mgm dy	3 3	12/83 12/83	12/84 12/84	12/83 12/83	3/84 3/84	Order overdue Order overdue
567892	Susan James Box 10 Group 2 RR 3 Petland	INH	300 mgm dy	3	12/83	12/84	3/84	6/84	
6789245	William Jones 516 Rhone Valley Swanton Manitoba	INH RIF	300 mgm dy 600 mgm dy	3 3	5/83 5/83	6/84 6/84	3/84 3/84	6/84 6/84	

FIELD SERVICE INDEX

This is a print-out that is sent on a SEMI-ANNUAL basis and gives the cases that have occurred in that particular health region for the past five years.

CONTACT LIST

COMPLETED LIST — for your information

CTR — CFU 1
Appendix 4

SANATORIUM BOARD OF MANITOBA — TUBERCULOSIS CONTROL PROGRAM
TUBERCULOSIS CASE FOLLOW-UP RECORD

PATIENT'S NAME: Mrs. Jane BLACK **CHART NO.:** 1234567-8 **D.O.B.** May 28, 1944

ADDRESS: 123 Any Street, Winnipeg, Manitoba Phone: 234-5678 #123 Pink Flamingo Band

DIAGNOSIS: Pulmonary Tuberculosis, Active, Bacillary on Smear **DATE OF DIAGNOSIS:** 1/8/86

Bacillary on Culture 1/9/86

Disseminated Tuberculosis, Active, Bacillary on Smear 15/1/87

NAME OF CONTACT, ADDRESS AND/OR TREATY NO.	D.O.B.	FREQUENCY OF CONTACT TO PATIENT	B.C.G. STATUS	RESULTS OF MANTOUX 1ST	RESULTS OF MANTOUX 2ND	DATE & PLACE CHEST X-RAY	COMMENTS
BLACK Joe 123 Any Street Winnipeg, Man #123 Pink Flamingo Band Phone: 234-5678	1/1/43	Husband	3/6/52			Resp. Cent. 3/8/86 Neg Resp. Cent. 17/1/87 ? Active T.B.- Admit	#345678-9 Prev. Tbn. neg. on INH 8/86
WHITE Mary 796 Wayout Street Winnipeg, Manitoba #234 Wherever Band Phone: 123-4567	6/2/20	Mother	no	3/8/86 0 mms		Resp. Cent. 3/8/87 Neg	#445566-7 Unco-operative for 2nd testing
WHITE Fred 796 Wayout Street Winnipeg, Manitoba #234 Wherever Band	3/3/18	Father	no	3/8/86 (Not read)	11/11/86 15 mms	Resp. Cent. 3/8/86 Neg Resp. Cent. 11/11/86 Neg	#444555-6 Unco-operative for testing 1/87
BROWN Susan 234 Side Street Brandon, Man.	1/7/47	Sister	scar	15/8/86 25 mms		Brandon 15/8/86 ''repeat x-ray'' Brandon 29/9/86 Neg	P.H.N. Notified 5/8/86 Prev. tbn. neg
GREEN Mabel 456 Front Street Calgary, Alta	10/8/45	Friend; visited with x 1 mos. 2 mos. ago					Letter to Dr. Fast 8/86

NOTICE OF EXAMINATION is sent to the Health Region when the patient is seen at the Respiratory Hospital as an Out-patient and lets the Public Health Personnel know that the patient is on tuberculosis medication. The "Notice of Examination" will indicate if a Public Health Nurse's home visit is warranted.

AN INTENT TO DISCHARGE is sent to the Health Region when the patient leaves the hospital and it includes information about his/her drugs, any reaction the patient has had to his/her drugs. The Public Health Nurse makes a home visit to review the diagnosis of tuberculosis, treatment and drugs and also looks for side effects. Sometimes these problems occur once the patient is home. If the patient is on INH chemoprophylaxis, often the best way to find out if the patient is taking his drugs is to ask him exactly what time of the day he takes his drugs. If it is a different time every day, there is very likely a problem. For other drug therapy, the Medical/Nursing plan will be established while the patient is in hospital and the Public Health Nurse will be consulted.

Re-treatment is generally more complicated, more expensive and more toxic. Results of Public Health Nurse visits are recorded on "Intent to Discharge" sheet and returned to Tuberculosis Nursing Co-ordinator (Appendix 5).

Appendix 17

INSTRUCTIONS
(where applicable)
PLEASE COMPLETE AND RETURN FIRST COPY TO TUBERCULOSIS CONTROL SERVICES

INSTITUTION RETAIN COPY 4

TUBERCULOSIS CONTROL SERVICES

MANITOBA LUNG ASSOCIATION
A DIVISION OF THE SANATORIUM BOARD OF MANITOBA
810 SHERBROOK STREET, WINNIPEG, MANITOBA R3A 1R8
TELEPHONE 774-1345

NOTICE OF DISCHARGE

REFERRING PHYSICIAN: Dr. John Doe DATE March 12, 1987

Chart Number 1234567-8

NAME Mrs. Jane BLACK Band & Treaty Number #123 Pink Flamingo

ADDRESS 123 Any Street, Winnipeg, Manitoba D.O.B. May 28, 1944

DESTINATION as above Telephone Number 234-5678

ANTICIPATED DATE OF DISCHARGE: March 14, 1987 WELFARE ASSISTANCE REQUIRED ☐ YES ☐ NO

DISCHARGE INSTRUCTIONS (Medications, Physical Therapy, Education Classes, Return Appointments)

Patient was diagnosed with Pulmonary Tuberculosis, Active, Bacillary on smear in August 1986 - was treated with INH, Rifampin and Pyrazinamide.
ADMITTED to the Respiratory Hospital January 13, 1987.
Sputum, urine, aspirated fluid (wrist) all bacillary on smear.

SAMPLE

To continue on: INH 300 mgms daily)
Rifampin 600 mgms daily) for 9 months (September 1987)
Streptomycin 1 gram I.M. twice weekly - to come to the Respiratory Hospital for injection.
Return appointment Respiratory Hospital April 15, 1987 at 9:30 A.M. with Dr. Blank.

DIAGNOSES: — Disseminated Tuberculosis,
Active, Bacillary on Smear.

Signed:

TO BE COMPLETED BY FIELD SERVICE STAFF.

Health Unit: East District

Are Home Conditions Satisfactory? ☒ YES ☐ NO Can patient's medical regimen be supervised? ☒ YES ☐ NO

REMARKS: Two home visits have been made to Mrs. Black. She has a good understanding of the medication she is on. Public Health Nurse will make frequent visits for support - occasionally Mrs. Black has questions and concerns about her health status.

Signed: Mrs. S. Nurse

CHART COPY WHITE REFERRING PHYSICIAN CANARY HEALTH UNIT PINK INSTITUTION COPY GOLDENROD

ORDERING X-RAY FORMS:

Four-part forms for "X-ray for T.B. Control Program" can be obtained by telephoning the Central Tuberculosis Registry (Appendix 10).

X-RAY FOR TB CONTROL PROGRAM

Mail to MANITOBA LUNG ASSOCIATION
2nd FLR 629 McDERMOT AVE
WINNIPEG MANITOBA R3A 1P6

Name Susan BROWN DOB 1/07/47 (Day Month Yr.) Date 20.8.86

Name of Parent or Spouse ..... Disc. No. Treaty No. .....

Address 234 Side Street, Brandon, Manitoba

Referring Physician or Health Unit Brandon H.U.

Hospital or Health Unit X-Ray Number

Name of Hospital or Health Unit
BRANDON

Survey follow-up ☐ Contact follow-up ☐ Contact-of Mrs. Jane Blac

TUBERCULIN: Strength: ..... Result ..... mm B.C.G.: No ☐ Yes ☒ Date ?

X-RAY READING: Essentially Negative ☐

Tuberculin 15.8.86 - 25 mms

SAMPLE

Appendix 19

RESPIRATORY CENTRE

OUT-PATIENT CHEMOTHERAPY RECORD

CHART NUMBER 1234567-8

NAME Mrs. Jane BLACK D.O.B.: May 28, 1944

ADDRESS: 123 Any Street, Winnipeg, Manitoba. Telephone: 234-5678

DIAGNOSIS: Disseminated Tuberculosis, Active, Bacillary on Smear 3/87

Doctor: _____

Place of Employment: _____ Work telephone number _____

Welfare Worker: _____ Worker's Telephone number _____

Treatment START DATE: August 1986 Welfare # _____

DRUGS:		COMPLETION DATE:
	INH 300 mgms daily	September 1987
	Rifampin 600 mgms daily	September 1987
	Streptomycin 1 gram I.M. twice weekly.	June 1987

Month	Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	*
MARCH	1987																																

SAMPLE

O.P.D. Appts.:

1. April 15, 1987 @ 9:30 A.M.
2. _____
3. _____
4. _____

Total number of treatments completed _____

PROBLEMS: _____

Signature	Initials

On COMPLETION of TREATMENT, please RETURN form to: Central T.B. Registry
Room RS 118, 810 Sherbrook Street
Winnipeg, Manitoba R3A 1R8

RE-ORDERING MEDICATION

IT IS THE RESPONSIBILITY OF THE PUBLIC HEALTH NURSE TO SEE THAT DRUGS ARE RE-ORDERED AS NECESSARY.

The procedure for re-ordering drugs is either by telephone (787-2341) or by filling in a requisition and sending it to the Central Tuberculosis Registry (Appendix 5).

NOTE: Be sure all necessary information is included and allow ten to fourteen days for delivery.

FROM J. Smith, RN.
The Pas Health Unit
Box 25, The Pas

DATE August 1987

TO **Miss J. MacMorran, R.N.**
Co-ordinator, Tuberculosis Nursing
Respiratory Centre
810 Sherbrook Street
Winnipeg, MB R3A 1R8

PATIENT'S NAME Mrs. Jane Black **CHART NUMBER** 1234567-8

ADDRESS (Prev. of Wpg.) Presently at Box 100, The Pas, Manitoba

The above patient who is enrolled with the Tuberculosis Control Program, requires a further supply of the following medication:

3 months supply INH 300 mgms. daily

3 months supply RiFAMPIN 600 mgms. daily

1 months supply STREPTOMYCIN 1 gm. twice weekly

MANITOBA LUNG ASSOCIATION

A division of the Sanatorium Board of Manitoba

Tuberculosis Control Services

810 Sherbrook Street, Winnipeg, Manitoba R3A 1R8
(204) 774-1345

M.D. Rattray
Chariman of the Board

R.F. Marks, C.A.
Executive Director

E.S. Hershfield, M.D., F.R.C.P.(C)
Director, Tuberculosis Control

FIELD ADMISSION TO THE TUBERCULOSIS CONTROL PROGRAM

Chart Number _____

Surname & First Name with Initials BROWN, Susan

Date of Birth July 1, 1947 Country of Birth _____

Year of Arrival in Canada _____

Sex _____ Marital Status _____ Maiden Name _____

Next of Kin _____ Relationship _____

Treaty No. or Disc No. _____ Band _____

Street Address 234 Side Street Telephone Number _____

City or Town Brandon, Manitoba. Municipality Cornwallis

Attending Physician _____ M.H.S.C. # _____

Date and Place of Last Chest X-ray September 1986 - Brandon

Result of Last Chest X-ray Negative

5 TU PPD Tuberculin Test: Date August 1986 Result 25 mm

Date of B.C.G. ? Scar

Diagnosis Positive Tuberculin; close contact with Active Pulmonary Tuberculosis.

Medication(s) INH 300 mgms daily Start Date October 1986

CONTACT OF:

Surname & First Name Mrs. Jane BLACK

Diagnosis Pulmonary Tuberculosis, Active, Bacillary on Smear (9/86)

Band & Treaty Number #123 Pink Flamingo Band.

Street Address 123 Any Street,

City or Town Winnipeg, Manitoba.

PLEASE RETURN COMPLETED FORM TO:

Tuberculosis Control Services
Central Tuberculosis Registry
Room RS 201, 810 Sherbrook Street
Winnipeg, Manitoba
R3A 1R8

A Christmas Seal Service

Frequently Used Addresses and Telephone Numbers

Appointment Clerk
Ambulatory Clinic
Respiratory Hospital
810 Sherbrook Street
Winnipeg, Manitoba
R3A 1R8

787-2384

Central Tuberculosis Registry
Room RS 201
810 Sherbrook Street
Winnipeg, Manitoba
R3A 1R8

787-2341 or 774-1345

Dr. E.S. Hershfield
Director
Tuberculosis Control
810 Sherbrook Street
Winnipeg, Manitoba
R3A 1R8

787-2338

Miss J. MacMorran, R.N.
Co-ordinator, Tuberculosis Nursing
Central Tuberculosis Registry
Room RS 201
810 Sherbrook Street
Winnipeg, Manitoba
R3A 1R8

787-2341 or 774-1345

Manitoba Lung Association
2nd floor,
629 McDermot Avenue
Winnipeg, Manitoba
R3A 1P6

774-5501